

**What is Claimed is:**

1. A screw and composite lumber assembly comprising:
  - a composite lumber member having a top surface and an interior of composite material;
  - a screw comprising a head with a substantially flat top surface, said shank having a pointed tip and an upper portion and a lower portion, said upper portion being adjacent the head and having a first cross-section with a first diameter, said lower portion having a second cross-section with a second diameter which is less than said first diameter, and being adjacent the tip end, said upper portion and lower portion having threads, the upper portion having a greater number of threads per unit of length than the lower portion, said upper portion threads and thick cross-section being associated with a displaced material derived from the interior region of the composite lumber material, said displaced material having been displaced by said lower portion threads, said substantially flat top surface of the head and the composite lumber top surface forming a substantially coplanar interface.
2. The screw and composite lumber assembly of claim 1, wherein the screw shank is formed by extrusion, and said upper portion has more mass than said lower portion.
3. The screw and composite lumber assembly of claim 1, wherein the upper portion has twice the number of threads per unit of length than the number of threads per unit length on the lower portion.
4. The screw and composite lumber assembly of claim 3, wherein the upper portion has 18 threads per inch and the lower portion has 9 threads per inch.

5. The screw and composite lumber assembly of claim 1, wherein said head defines a recessed opening for receiving a tool.

6. The screw and composite lumber assembly of claim 1, wherein the threads in the upper portion have a gauge size of about #12, and a thread pitch of about 24°/24°, said threads in the lower portion have a gauge size of about #9, and a thread pitch of about 25°/10°.

7. The screw and composite lumber assembly of claim 1, wherein the threads in the upper portion have a major diameter and a minor diameter wherein the minor diameter is in the range of about 0.65 to about 0.68 of the major diameter.

8. The screw and composite lumber assembly of claim 1, wherein the head has a recessed under surface configured to capture a composite material displaced from the interior of the composite material by the lower portion of the screw.

9. The screw and composite lumber assembly of claim 1, wherein the threads in the upper portion have an inverted buttress configuration.

10. The screw and composite lumber assembly of claim 1, wherein a sum of an upper flank angle and a lower flank angle of the threads in the upper portion is equal to or greater than a sum of an upper flank angle and a lower flank angle of the threads in the lower portion.

11. The screw and composite lumber assembly of claim 10, wherein the threads in the upper portion have an upper flank angle of 30° and a lower flank angle of 10°, and the threads in the lower

portion have an upper flank angle of  $20^\circ$  and a lower flank angle of  $20^\circ$ .

12. A method for securing composite lumber to a base support comprising:

- associating a fastener head with a driving tool;

- placing a fastener tip in contact with a top surface of a composite lumber member having an interior of composite material;

- rotatably driving the fastener such that the lower portion threads enter the interior of the composite lumber member;

- displacing composite lumber material with the lower portion threads such that it moves toward the top surface of the composite lumber member;

- continuing the rotational driving of the fastener such that an upper portion cross-section and threads contact the displaced composite lumber material and move the displaced material away from the composite lumber member top surface;

- stopping rotational driving of the screw at the point the flat surface of the head is substantially co-planar with the composite material surface.

13. The screw and composite lumber assembly of claim 12, wherein a sum of an upper flank angle and a lower flank angle of the threads in the upper portion is equal to or greater than a sum of an upper flank angle and a lower flank angle of the threads in the lower portion.

14. A screw, composite lumber, and base support assembly comprising:

- a base support;

- a composite lumber member having a top surface and a bottom surface engaging said base support and an interior

region of composite material; and

a screw having a shank and a head, said shank including an upper threaded portion and a lower threaded portion, said head being adjacent the upper threaded portion and having a substantially flat top surface with a tool engagement portion, said shank further having a tip adjacent the lower threaded portion, and a middle portion intermediate the tip and the head, said upper threaded portion having a greater area cross-section than said lower threaded portion, said upper portion threads being disposed about the shank and extending from a first point adjacent the middle portion to a second point adjacent the head, said lower portion threads being disposed about the shank and extending from a third point adjacent the middle portion to a fourth point adjacent the tip, said upper portion having a greater number of threads per unit of length than the lower portion, said upper threaded portion associated with a displaced material derived from the interior of the composite lumber member by said lower threaded portion, said substantially flat head surface and composite lumber top surface forming a substantially co-planar interface, and said lower thread portion being threadably engaged in said base support.

15. The screw and composite lumber assembly of claim 14, wherein a sum of an upper flank angle and a lower flank angle of the threads in the upper portion is equal to or greater than a sum of an upper flank angle and a lower flank angle of the threads in the lower portion.

16. A fastener and composite lumber assembly comprising:

a composite lumber member having a top surface and a composite material interior; and

a threaded fastener having a shank, a tip and a head,

said shank having an upper substantially cylindrical threaded portion and a lower substantially cylindrical threaded portion, said upper portion having a cross-section greater than a cross-section of the lower portion, said upper portion having a greater number of threads than said lower portion, said upper portion threads being associated with composite material which has been moved to a substantially non co-planar position extending from the composite lumber member top surface by said lower threaded portion, said head having a top surface that is substantially parallel with the composite lumber member top surface, a bottom surface, and a crown that extends beyond the lower surface of the head such that a recessed region is formed between a lower edge of the crown and the shaft.

17. The screw and composite lumber assembly of claim 16, wherein a sum of an upper flank angle and a lower flank angle of the threads in the upper portion is equal to or greater than a sum of an upper flank angle and a lower flank angle of the threads in the lower portion.